Less Maladaptiveness of the Maladaptive Coping Styles in Japan than in Germany: Cross-cultural Comparison of Adaptive and Maladaptive Coping Styles

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Abstract

The Maladaptive and Adaptive Coping Style Questionnaire (MAX) is a comprehensive tool for measuring coping styles including three subscales: maladaptive coping, adaptive coping, and avoidance. This study developed a Japanese version of MAX and evaluated the relationship between the coping styles and psychopathologies between the Japanese sample and the German sample. For the cross-cultural comparison, we used the Japanese community sample and German data set acquired by Moritz et al. (*Journal of Affective Disorders* 191:300–307, 2016). Factor analysis was conducted with the Japanese version of the MAX. Referring to the original version, we hypothesized the three-factor structure. However, the results showed that the adaptive coping subscale had less similarity to the original version, whereas the maladaptive coping and avoidance subscales were similar to the original. As the result of cultural comparison, the Japanese participants showed more maladaptive coping and avoidance. Moreover, the maladaptive coping styles had weaker correlations with the psychopathologies in the Japanese sample than with those in the German sample in the present study.

Keywords Coping · Cultural difference · Stressor · Scale translation · Psychopathology · Personality

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Introduction

The behavior of dealing with stressors or problems is referred to as coping. There have been many studies on coping, many of them focused on adaptive and maladaptive coping. For example, cognitive reappraisal, which is the re-interpretation of affective stimuli or events, is assumed to be one of the typical adaptive coping strategies (as a review, Dryman & Heimberg, 2018). This type of coping is presumed to reduce negative affective responses to stressors (e.g., Gross & John, 2003). The strength of cognitive reappraisal is often negatively correlated with psychopathologies such as social anxiety or depression (Dryman & Heimberg, 2018). On the other hand, rumination, repetitive thoughts on negative events, or negative emotions is one of the typical strategies of maladaptive coping. It has been repeatedly reported that rumination increases the negative effect of a stressor, leading to the deterioration of psychopathologies such as depression (e.g., Young & Dietrich, 2015). As a result, maladaptive coping styles or the lack of adaptive coping styles against stressors are assumed to increase vulnerability to psychopathology. The relationship between coping and psychopathology has been largely investigated in the field of depression or anxiety, and the relationship between coping and psychosis has also garnered recent attention (Phillips et al., 2009).

Recently, Moritz et al., (2016) organized previous findings on adaptive and maladaptive coping to develop a comprehensive measurement of coping profiles. The Maladaptive and Adaptive Coping Style Questionnaire (MAX) questionnaire consists of three subscales: maladaptive coping, adaptive coping, and avoidance. Most of the items were corrected according to the studies of (Aldao & Nolen-Hoeksema, 2012), while some items were newly added by Moritz et al. The items cover traditional coping styles and those that have received more attention in recent times, such as rumination or catastrophizing in maladaptive coping and acceptance or re-appraisal in adaptive coping. Moritz et al. argued that previous studies have focused on different coping strategies and psychopathologies separately; thus, they have rarely simultaneously compared the effectiveness of various coping strategies. On that point, MAX can measure typical coping strategies comprehensively and easily; therefore, we can identify an effective coping strategy for a specific psychopathology.

The present study developed a Japanese version of MAX. Coping is also an important mental health topic in Japan (e.g., Kato, 2013; O'Connor & Shimizu, 2002); however, most of the measurements used in Japan were originally developed in Japanese but not translated to other languages, thus making it difficult to perform intercultural comparisons. Scales translated from other languages were developed a long time ago, so recently attended coping strategies, such as mindfulness or re-appraisal, are not included in these scales. Thus, the Japanese version of MAX, a new and comprehensive measurement of coping strategies, can facilitate further progress in coping studies in Japan.

The present study also compared coping strategies among different cultures. Several studies have compared coping preferences between the Japanese and other

nationalities. For example, Radford et al., (1993) compared Australian and Japanese students from the viewpoint of coping strategies in decision-making. They found that Japanese students used more avoidance or maladaptive coping strategies and less adaptive strategies in the decision-making process. Considering this result, the present study expected the Japanese to show more maladaptive coping and avoidance and less adaptive coping. Additionally, we examined the relationship between coping strategies and psychopathology. O'Connor and Shimizu, (2002) found that native Japanese university students have a stronger preference for emotion-focused coping (i.e., escape-avoidance and positive reappraisal) than native British students. However, while there was a positive correlation between perceived stress and emotion-focused coping among British students, there was no correlation among Japanese students. Thus, there may be cultural differences in the relationship between psychopathologies and coping strategies (e.g., maladaptive coping in European culture may not be connected with maladaptiveness in Japan), in addition to the simple difference in preference of the strategies.

Relative to this second purpose, we prioritized comparability with the original version in the present development of the Japanese version. We tried to retain the original items in the questionnaire and did not emphasize the reconstruction of the measurement.

Method

Ethical Approval

This study was approved by the Ethics Committee of the University of Tokyo (approval number: 517).

Participants

The present study conducted two surveys. The first one was to validate the Japanese version of MAX and compare it with previous results in Germany (Moritz et al., 2016). In this survey, 1200 community participants (603 women, 597 men, average age = 44.7, SD = 12.6; Table 1) were recruited through an online research service provided by Rakuten Research (Tokyo, Japan). The second survey examined test–retest reliability with a 1-month test–retest interval. In the second survey, 100 community participants (54 females, 46 males, average age = 45.6, SD = 13.1) and 100 university students (60 females, 40 males, average age = 19.3, SD = 0.5) were recruited. The community participants were recruited by Rakuten Research. The university students were recruited from a Japanese university and completed the questionnaire outside of class time.

Measures

The following four questionnaires were administered to participants in the first survey, while only the Japanese version of MAX was administered in the second survey.

Table 1 Sample characteristics of Japanese (first survey) and German dataset

	Japan	Germany
Age in years	44.67 (12.64)	45.51 (13.15)
Gender (female/male)	50.3%/49.8%	60.4%/39.6%
Occupational status (working/student/retired/unemployed/other)	69.5%/1.0%/3.2%/7.7%/18.7%	60.4%/14.4%/13.7%/5.4%/6.1%
Education (university or above/below university/unknown; Japan) (13th grade/ below 13th grade; Germany)	49.2%/50.3%/0.5%	62.5%/37.5%

(1)   The Japanese version of the Maladaptive and Adaptive Coping Styles question-
        naire (Moritz et al., 2016)

The authors translated the original version of MAX into Japanese and used back-
translation to check the translation accuracy. Dr. Steffen Moritz (University Medi-
cal Center Hamburg), who developed the original version of MAX, approved the
present translation. MAX is a 21-item questionnaire measuring participants' coping
style against the stressor (e.g., "I accept a situation and try to make the best of it.").
Moritz et al., (2016) originally excluded two items (question numbers 10 and 21)
when they composed the subscales, as these items showed low factor loadings in
the factor analysis. Nevertheless, these two items were also translated and included
in the present survey to compare the results of the factor analysis with the original
study. Following the original study, we excluded these two items from the compo-
nents of the subscales.

(2)   The Japanese version of Obsessive-Compulsive Inventory-Revised (OCI-R;
        Ishikawa et al., 2014; Foa et al., 2002; $\alpha = 0.91$)

The OCI-R is an 18-item questionnaire that measures obsessive–compulsive
symptoms (e.g., "I check things more often than necessary."). Ishikawa et al., (2014)
developed the Japanese version of the OCI (Foa et al., 1998), composed of 42 items.
Among the 42 items, we extracted 18 items according to Foa et al., (2002) to use in
the Japanese version of the OCI-R.

(3)   The Japanese version of the Patient Health Questionnaire-9 (PHQ-9; Kroenke
        et al., 2001; Muramatsu & Kamijima, 2009; $\alpha = 0.87$)

The PHQ-9 is a nine-item questionnaire for measuring depressive symptoms
(e.g., "Feeling down, depressed, or hopeless").

(4)   The Japanese version of the Paranoia Checklist (JPC; Yamauchi et al., 2009;
        $\alpha = 0.94$)

JPC is a nine-item questionnaire for measuring paranoid ideation (e.g., "Someone
I know has bad intentions towards me."). JPC was developed by Yamauchi et al.
(2009) based on the Paranoia Checklist developed by Freeman et al. (2005).

Cross-cultural Comparison

We received the data set ($n = 2200$; 871 females, 1329 males, average age $= 45.5$,
$SD = 13.2$) acquired by Moritz et al. (2016) from Prof. Dr. Moritz, the original
developer of MAX. This dataset was used to compare the results for the Japanese
sample and the German sample in the present study. The data set was anonymized,
so the authors could not access the participants' personal information in Moritz
et al.'s dataset.

Results

Factor Analysis

First, we conducted an exploratory factor analysis on all 21 items of MAX on the data set from 1200 Japanese community participants in the first survey (Table 2). We assumed a three-factor structure based on a previous study (Moritz et al., 2016) and a screen plot. The results showed that the factor corresponding with the maladaptive coping subscale became the first factor (which was the second factor in Moritz et al., 2016), and the factor corresponding with the adaptive coping subscale became the second factor (which was the first factor in Moritz et al.) in the present data. Compared to the previous result in Germany, the present result in Japan suggests that the maladaptive factor has a stronger contribution to the explanation of the variances of the MAX score. As expected, the items generally showed a pattern of loading for each factor. However, three items (items 5, 8, and 9) of the adaptive coping subscale most strongly and negatively loaded onto the factor corresponding with the maladaptive coping subscale, showing the low compatibility of the adaptive coping subscale between our Japanese sample and German sample. Although item 16 also showed weak loading (below 0.300), we found that the maladaptive coping

Item	Maladaptive coping	Adaptive coping	Avoidance
Q.1	0.142	0.821	−0.196
Q.2	0.063	0.767	−0.027
Q.3	0.091	0.799	−0.085
Q.4	−0.114	0.454	0.254
Q.5	−0.427	0.202	0.245
Q.6	−0.205	0.4	0.02
Q.7	−0.097	0.518	0.064
Q.8	−0.51	0.296	0.171
Q.9	−0.464	0.18	0.043
Q.10	0.199	0.103	−0.275
Q.11	0.635	0.041	0.059
Q.12	0.618	−0.009	−0.094
Q.13	0.734	0.022	0.071
Q.14	0.715	0.049	0.075
Q.15	0.503	−0.099	0.289
Q.16	0.274	0.078	−0.013
Q.17	0.398	0.138	0.36
Q.18	−0.056	0.014	0.706
Q.19	0.046	0.103	0.569
Q.20	0.005	−0.293	0.453
Q.21	0.143	0.041	0.545

Table 2 Factor structure of the Japanese version of MAX

Gray shadings indicate items belonging to each subscale

and avoidance subscales were compatible between the Japanese version of the MAX and the original MAX.

Second, confirmatory factor analysis was performed using a hypothetical model with the same three factors as the original version and items corresponding to each factor. The results showed that fit indices were RMSEA = 0.09, CFI = 0.74, GFI = 0.82, AGFI = 0.78, and we considered that the fitness of the model was not high. Consequently, we conducted further analysis only with the maladaptive coping and avoidance subscales, which showed high compatibility between the Japanese and German versions. Using items belonging to these two subscales, a confirmatory factor analysis, hypothesizing the two-factor structure, was conducted. The results showed that the fit indices were RMSEA = 0.09, CFI = 0.882, GFI = 0.94, and AGFI = 0.90, which were better than the three-factor model. Although some of the fit indices did not indicate an acceptable model fit (RMSEA < 0.06, CFI > 0.95; Weston & Gore., 2006), we decided to compare the maladaptive coping and avoidance subscales in the Japanese version of MAX with those in the German version in the present study.

Scale Reliability

Cronbach's α coefficient was calculated to examine internal consistency. The results of each of the subscales were as follows: adaptive coping, $\alpha = 0.81$; maladaptive coping, $\alpha = 0.79$; avoidance, $\alpha = 0.60$. The results show acceptable to good internal consistency.

Furthermore, test–retest reliability was examined using the data set from 100 community participants and 100 university students. The results showed poor test–retest reliability for the community data (adaptive: $r = 0.48$; maladaptive: $r = 0.61$; avoidance: $r = 0.57$; $ps < 0.001$), while the reliability was acceptable for the data of the university students (adaptive: $r = 0.78$; maladaptive: $r = 0.65$; avoidance: $r = 0.67$; $ps < 0.001$). In particular, the adaptive subscale showed poor test–retest reliability only for the community sample. This lower test–retest reliability may be caused by some group characteristics of the present community sample, and not by the unreliability of the questionnaire itself, because the adaptive subscale shows acceptable reliability for the university students. We could not specify the cause of the unreliability of the adaptive coping subscale in the present study, but can speculate that it may be linked to the unstable factor structure of the adaptive coping subscale. These results should be reexamined in a future study using a larger dataset.

Cross-cultural Comparison

As already described, we compared the maladaptive coping and avoidance subscales between the two countries. First, we checked the mean difference of the two subscales between the Japanese sample and the German sample using simple t-tests (Table 3). There were significant differences between the two countries for both subscales, indicating that maladaptive coping and avoidance were higher in the Japansese sample. Considering the effect size (Cohen's d), the difference

Table 3 The average score of MAX subscales compared between Japan and Germany

	Japan	Germany	*t*-test
Maladaptive	2.55 (*SD*=0.53)	2.18 (*SD*=0.66)	$t(3398)=16.8$, $p<.001$, $d=0.60$
Avoidance	2.61 (*SD*=0.58)	2.36 (*SD*=0.68)	$t(3398)=10.8$, $p<.001$, $d=0.39$

in maladaptive coping showed a medium effect size ($d=0.60$), and difference in avoidance showed a small effect size ($d=0.39$), suggesting that these differences were not negligible.

Subsequently, we conducted a correlation analysis between MAX subscales and psychopathologies (Table 4, Fig. 1). The correlation patterns in the Japanese sample and German sample were mostly identical. We then attempted to investigate the differences in the correlation coefficients between the two countries. We conducted Z-tests for correlation coefficients using the statistical software provided by Preacher, (2002). As a result, the maladaptive and avoidance subscales showed weaker correlations with the psychopathologies in the Japanese sample than in the German sample. The effect size of correlation difference (Cohen's *q*) suggests that small effect size ($0.1 < q < 0.3$) was found on the correlation between maladaptive subscale and PHQ-9 and OCI-R, and the correlation between avoidance subscale and OCI-R. However, there was no meaningful difference ($q < 0.1$) in the correlation between the maladaptive subscale and Paranoia Checklist, and the correlation between the avoidance subscale and the PHQ-9.

Additionally, we tested the differences of demographic characteristics between the Japanese sample and the German sample. The chi-squared test showed the significant difference of the ratio in gender ($\chi^2(1)=35.92$, $p<0.01$), and education ($\chi^2(1)=53.99$, $p<0.01$). The original data of Moritz et al., (2016) was not available about age and occupational status.

Table 4 Correlations between the MAX subscales and the psychopathologies in Japan and Germany

	PHQ	OCI	Paranoia
Maladaptive	.431** (.590**)	.380** (.473**)	.391** (.461**)
	$Z=-6.028, p=.000$ $q=0.21$	$Z=-3.17, p=.002$ $q=0.11$	$Z=-2.38, p=.02$ $q=0.08$
Avoid	.268** (.346**)	.167** (.287**)	.199** (.263**)
	$Z=-2.399, p=.016$ $q=0.09$	$Z=-3.527, p=.0004$ $q=0.13$	$Z=-3.17, p=.059$ $q=0.07$

The correlation coefficients in Germany are shown in parenthesis. Gray shaded areas indicate significant differences in correlation coefficients between Japan and Germany. Cohen's q is provided as the index of effect size of correlation difference

Fig. 1 Relationship between MAX subscales and psychopathologies in the Japanese sample and the German sample. The items in OCI-R are typically rated in a Likert scale ranging between 0 and 4; however, they were rated between 1 and 5 in Moritz et al., (2016)
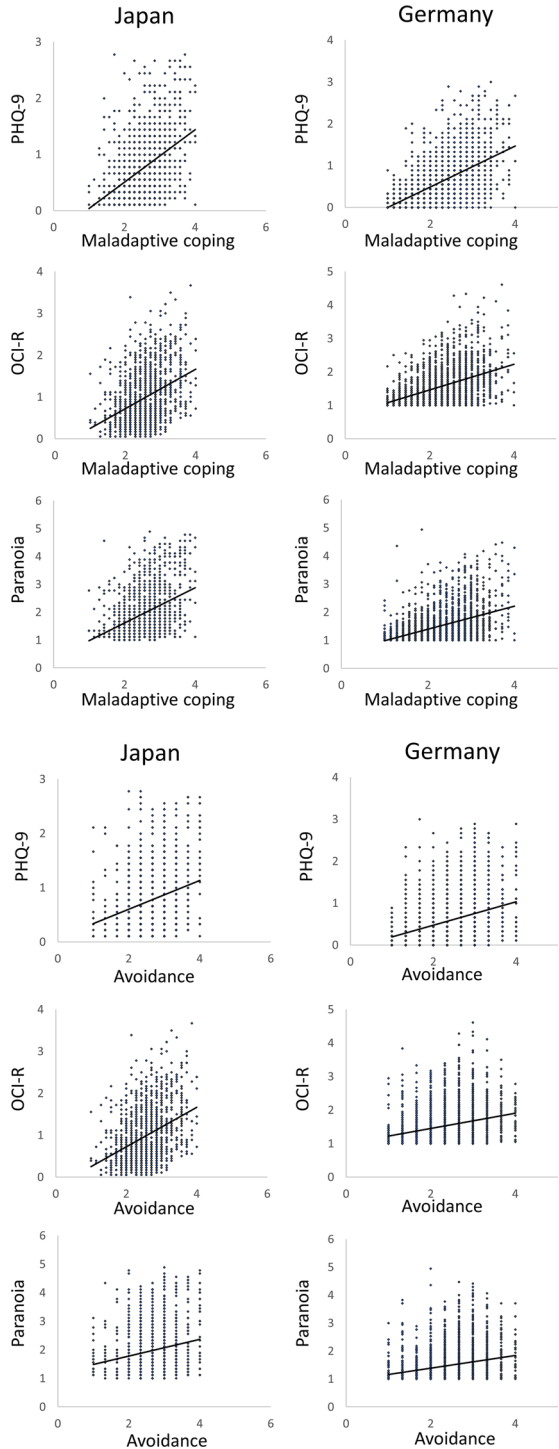
Discussion

This study aimed to develop the Japanese version of MAX and perform cultural comparisons of the coping styles of Japanese and German community samples concerning psychopathologies.

First, this study developed a Japanese version of the MAX. A three-factor structure was assumed for this version, similar to the original MAX. The factor analysis results showed that the factor structure of the Japanese version of the MAX was mostly similar to the original German version; however, the adaptive coping subscale showed some differences between our Japanese sample and German sample. While we translated all three subscales in the present study, there is a need to carefully consider the factor structure of this scale in future studies, especially concerning the adaptive coping scale. Some of the items belonging to the adaptive subscale in Moritz et al., (2016) were strongly loaded in the maladaptive factor in the present study, suggesting that the maladaptive factor is more dominant in MAX in the Japanese sample than in the German sample. We cannot specify the cause of this difference in the present results and will have to investigate further to understand the cultural differences in coping strategies. Moreover, we discovered that the confirmatory factor analysis did not show an eligible model fit in the present study, suggesting that some adjustments to the questionnaire may be required in future studies.

As expected, the cross-cultural comparison revealed more maladaptive coping and avoidance in the Japanese sample than in the German sample. Although we could not compare adaptive coping, the Japanese sample showed higher maladaptive coping and avoidance, as Radford et al., (1993) found. In contrast, the results also showed cultural differences in the relationship between coping styles and psychopathologies. Maladaptive coping and avoidance subscales have a positive but weaker correlation with psychopathologies in the Japanese sample compared to those in the German sample. While we cannot draw conclusions, we can guess the cause of this cultural difference. For example, interpersonal stressors are considered important in Japan (Hashimoto et al., 2012; Kato, 2013). Also, being humble and maintaining harmony with others is considered a desirable trait (Markus & Kitayama, 1991). Thus, some maladaptive coping such as "easily come to feel like I am a failure (item number 15)" or "usually blame myself (item number 17)" sometimes help to reduce interpersonal conflicts in Japan (while also leading to internal distress). Moreover, compared to Europeans, the Japanese often show "over-adaptation" (Sugawara et al., 2013), which is a tendency to follow the expectations of others. Over-adaptation can make individuals overly responsible; thus, it is sometimes better for the Japanese (especially those who have obsessive–compulsive tendencies) to avoid difficulties than to continue to face the problem. From another point of view, there were some differences in sample characteristics between our Japanese sample and German sample, which can affect the results. In particular, there were fewer students in the Japanese sample than in the German sample. Though working people were the majority in both samples, there might be student-specific patterns of coping. The present study was not mainly focused on the relationship between demographic characteristics and coping styles; however, it can be further explored in future studies.

Moreover, the effect size suggested a small effect on the differences in correlations, and some of these effects did not have a meaningful effect size. We must carefully consider whether these differences have a crucial effect on mental health, and a longitudinal study may be required to address this issue. Although we cannot come to firm conclusions with the present results only, the present study enables further cultural comparison between Japan and other countries; thus, we hope to conduct future studies to further explore this point.

Limitation

Although we succeeded in developing a Japanese version of the MAX and performing a cultural comparison, there are some limitations to the present study. First, we could not compare the adaptive coping subscale between the two countries. Based on the present results, we could not determine the cause of the different factor structures in the Japanese version. We need to carefully consider this in future studies, as the present study showed that the relationship between coping strategies and psychopathologies differed between the two countries—what is adaptive or maladaptive can differ between different cultures. The original subscales were retained in the present translation to Japanese; however, it would also be beneficial to reexamine the adaptive coping strategies in Japanese culture to reconstruct a customized version of MAX for research in Japan. It should also be carefully considered that we could not confirm measurement invariance between Japan and Germany (see the checklist of Van de Schoot et al., 2012). Thus, further adjustments to the questionnaire should be made, and the cultural differences between Japan and Germany should be reexamined to reach a conclusion about cultural differences. Moreover, we did not include the clinical participants in the present study. The coping strategy of the clinical sample could be different from that of the healthy participants; thus, the validity of MAX has to be tested in future studies. Starting with this study, we hope that the Japanese version of MAX will be used on various samples to overcome these limitations.

Declarations

Conflict of Interest The authors declare no competing interests.

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